nationalgridESO

CONTROL TELEPHONY ELECTRICAL STANDARD

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1. Purpose

The purpose of this document is to define the **Control Telephony** requirements between **Users** of the **Transmission System** (such as **Generators**, **HVDC System Owners**, **Network Operator and Non-Embedded Customers**) and National Grid ESO.

Control Telephony and **Automatic Logging Devices** such as EDL (Electronic Despatch Logging) or API (Application Protocol Interface) are the two principle tools used by National Grid ESO in instructing **Users** to control the **Total System**.

This document only covers the requirements for **Control Telephony**. The requirements for wider communications standards are covered in National Grid ESO's Communications Standards which are available on the National Grid ESO Website under the Grid Code Electrical Standards documents page.

As defined in CC.6.5.2.1 and ECC.6.5.2.1, **Control Telephony** is the principal method by which a **User's Responsible Engineer / Operator** and National Grid ESO **Control Engineers** speak to one another for the purposes of controlling the **Total System** under both normal and emergency operating conditions. **Control Telephony** provides secure point to point telephony for routine **Control Calls**, priority **Control Calls** and emergency **Control Calls**.

For the avoidance of doubt, this document only covers the technical requirements for **Control Telephony** between National Grid ESO and **User's** of the **Transmission System**. Whilst there are **Control Telephony** requirements between National Grid ESO and relevant **Transmission Licensees**, these requirements fall under the **System Operator Transmission Owner Code** (STC) and in particular STCP 04-5 (Operational Telephony). Whilst this document makes reference to **Transmission Licensees** and the co-ordinating role between National Grid ESO and relevant **Transmission Licensees**, the **Control Telephony** obligations on **Transmission Licensees** strictly falls under the **STC** and not the Grid Code. Therefore whilst this standard has obligations for National Grid ESO, it does not apply to transmission owners and hence **Transmission Licensee's** bound by the requirements of the **STC**. It should however be noted that **Transmission Licensees** in coordination with National Grid ESO will need to liaise with **User's** in order to facilitate the installation and coordination of **Control Telephony** in which any **Transmission Licensee** obligations would be through the **STC** and **TO Construction Agreement** (TOCA).

2. Introduction

The Grid Code requirements and the high level functionality for **Control Telephony** across Great Britain are described in CC.6.5.2 to CC.6.5.5 and ECC.6.5.2 to ECC.6.5.5. This **Electrical Standard** describes in more detail the technical interfaces and support requirements for **Control Telephony** between **Users** of the **Transmission System** and National Grid ESO in co-ordination with **Relevant Transmission Licensees**.

This **Electrical Standard** gives **Users** background and technical information regarding the **Control Telephony** systems that National Grid ESO in co-ordination with **Relevant Transmission Licensees** install at a **User's Site**.

The **Electrical Standard** also allows **Users** to understand the requirements of the **Control Telephony** system should a **User** decide to integrate the provided **Control Telephony** system with its own telephony system.

The **Electrical Standard** only contains generic information for **Control Telephony**. There still may be situations where additional obligations relating to **Control Telephony** will be required on a site-specific basis. Such site-specific details for **Control Telephony** will be specified in the **Bilateral Agreement**.

For the purposes of this document, any reference to National Grid ESO also includes any person, service provider or company nominated by National Grid ESO (which may include the co-ordinated role provided by a **Relevant Transmission Licensee** under the **STC**) to fulfil its obligations described in this document.

2. Scope

This **Electrical Standard** applies to National Grid ESO (in co-ordination with the **Relevant Transmission Licensees** as provided for in **System Operating Code Transmission Owner Code** Procedure STCP 04-5 and to **Users** (in the **GB Synchronous Area** only), who are required to have **Control Telephony**. For the avoidance of doubt it would also apply to Users connected to Offshore Transmission Systems even if those Offshore Transmission Systems are of an HVDC design.

For the purposes of this **Electrical Standard**, **Users** include;

(a) **Generators** (other than those which only have **Embedded Small Power Stations**);

(b) **Network Operators**;

(c) **Non-Embedded Customers**;

(d) **DC Converter Stations** owners and **HVDC System Owners**; and

(e) **BM Participants** and **Externally Interconnected System Operators**.

The provisions of this **Electrical Standard** will, in the case of **Network Operators**, apply to **Network Operator Control Centres**, and in the case of all other **Users** listed above, apply at the relevant **Control Points**.

The provisions of this **Electrical Standard** will, in the case of National Grid ESO apply to the **ENCC**

3. Definitions

In this document, any emboldened words are defined below, some of which are Grid Code terms.:

Automatic Logging Devices	As defined in the Glossary and Definitions of the Grid Code.
Bilateral Agreement	As defined in the Glossary and Definitions of the Grid Code.
Black Start	As defined in the Glossary and Definitions of the Grid Code.
BM Participants	As defined in the Glossary and Definitions of the Grid Code.
Control Call	As defined in the Glossary and Definitions of the Grid Code.
Control Centre	As defined in the Glossary and Definitions of the Grid Code.
Control Engineer	As defined in the Glossary and Definitions of the Grid Code.
Control Phone	A telephone which is connected the **Control Telephony** network and which has a capability as defined in CC.6.5.5 or ECC.6.5.5 of the Grid Code.
Control Point	As defined in the Glossary and Definitions of the Grid Code.
Control Telephony	As defined in the Glossary and Definitions of the Grid Code.
Control Telephony Network	The network provided by **Relevant Transmission Licensees** in coordination with National Grid ESO to carry **Control Telephony**.
DC Converter Stations	As defined in the Glossary and Definitions of the Grid Code.
Disaster Recovery or DR	As defined in section 8 of this document

Distribution Restoration Zone	As defined in the Glossary and Definitions of the Grid Code.
Distribution Restoration Zone Plan	As defined in the Glossary and Definitions of the Grid Code.
Electrical Standard	As defined in the Glossary and Definitions of the Grid Code.
Embedded Small Power Stations	As defined in the Glossary and Definitions of the Grid Code.
Emergency Control Call	A **Control Call** initiated by dialling the emergency code. On encountering network congestion, an emergency call will automatically disconnect non-emergency calls. These calls are presented with a distinctive ringing signal at the **TNCC** & **ENCC**.
ENCC	The National Grid ESO Electricity National Control Centre.
ESO Control Phone	The name given to **Control Telephony** to enable the **ENCC** to issue and receive instructions to **User's** at **Control Points** or **Network Operator Control Centres**. Historically an ESO Control Phone was previously referred to as the '*Green Phone'*.
Externally Interconnected System Operators	As defined in the Glossary and Definitions of the Grid Code.
GB Synchronous Area	As defined in the Glossary and Definitions of the Grid Code.
Generator	As defined in the Glossary and Definitions of the Grid Code.
HVDC System Owner	As defined in the Glossary and Definitions of the Grid Code.
Leased Line	A telecommunications circuit provided by a public telecommunications operator.

Local Joint Restoration Plan	As defined in the Glossary and Definitions of the Grid Code.
Mains Independence	In the event of loss of external electrical energy supplies, there shall be no loss of, or disruption to **Control Telephony** for at least the duration specified in section 11 of this standard. To comply with this requirement an alternative power source is required that is independent of external electrical energy supplies and does not require manual intervention. Beyond the specified duration, the alternative power source should be capable of providing power indefinitely with manual intervention (eg refuelling) unless automatic arrangements are in place.
Network Operator	As defined in the Glossary and Definitions of the Grid Code.
Non-Embedded Customer	As defined in the Glossary and Definitions of the Grid Code.
PABX	Private Automatic Branch Exchange – the name given to a **User's** own telephone exchange.
Pilot Cable	Privately owned telecommunications circuit provided on a dedicated cable within a site or between sites in close proximity to each other.
Responsible Engineer / Operator	A person nominated by a **User** to be responsible for **System** control.
Routine Control Call	A **Control Call** with normal (i.e. non-Emergency) status.
Relevant Transmission Licensee	As defined in the Glossary and Definitions of the Grid Code.
Restoration Service Provider	As defined in the Glossary and Definitions of the Grid Code.
Scottish Transmission Licensee	As defined in the Glossary and Definitions of the Grid Code.
SLA	Service Level Agreement.
System Operator - Transmission Owner Code or STC	Has the meaning set out in **The Company's Transmission Licence**.

System Operator Transmission Owner Code or **STC**	As defined in the Glossary and Definitions of the Grid Code.
TO Construction Agreement	As defined in Section J of the **System Operator Transmission Owner Code** or **STC**.
Total System	As defined in the Glossary and Definitions of the Grid Code.
Transmission Network Control Centre or **TNCC**	A **Transmission Licensee's** Transmission Network Control Centre.
Transmission Licensee	As defined in the Glossary and Definitions of the Grid Code.
Transmission System	As defined in the Glossary and Definitions of the Grid Code.
Trunk Line	Connection to the **Control Telephony Network** for carrying telephone calls.
User	As defined in the Glossary and Definitions of the Grid Code.

4. Overview of Control Telephony Network

The **Control Telephony Network** is a highly resilient private telephony network used to carry **Control Calls** for both the day-to-day management of the **GB System**, and for contingency or emergency. This would also extend to Black Start requirements where National Grid ESO contact **Black Start Service Providers** directly through a Local Joint Restoration Plan or where National Grid ESO instruct a **Network Operator** to establish a **Distribution Restoration Zone** in accordance with a **Distribution Restoration Zone Plan**. For **Network Operators** who have a **Distribution Restoration Zone Plan** in place, the requirements for resilient communications between the **Network Operator** and **Restoration Service Providers** is the responsibility of the **Network Operator**.

The entire **Control Telephony** network is resilient to a complete loss of mains electricity and will continue to operate normally following a mains power loss. There is no reliance on the public communications network which may suffer congestion during power blackouts or other events affecting the general public. The **Mains Independence** specification is given in section 11.

For the avoidance of doubt, the **Relevant Transmission Licensee** (in coordination with National Grid ESO) will be responsible for the installation and

maintenance **Control Telephony** and **Control Phones**, except as provided for under the **Grid Code**, this **Electrical Standard** or otherwise stated in the **Bilateral Agreement**.

5. Provision of Services at Control Points and Network Operator Control Centres

Where National Grid ESO specify that **Control Telephony** is required at a **Control Point** or **Network Operator Control Centre**, the **Relevant Transmission Licensee** in co-ordination with National Grid ESO will provide one **ESO Control Phone** which will be connected to the **Control Telephony Network** via a **Leased Line** or **Pilot Cable**. Where a **Leased Line** is utilised, equipment will be provided by the relevant **Transmission Licensee** in co-ordination with National Grid ESO at the **Control Point** or **Network Operator Control Centre**.

The **User** will be responsible for **Mains Independence** for the **Control Telephony** equipment. National Grid ESO in coordination with the relevant **Transmission Licensee** will be responsible for the installation of the communications infrastructure to the User's **Control Point**. The **User** will be responsible for the cross site wiring from the termination point at the **User's Control Point** site to the **User's** physical **Control Point**. National Grid ESO in coordination with the relevant **Transmission Licensee** will supply the **Control Phone** handset. The **User** will be responsible for the installation and infrastructure from the termination point at the **User's Control Point** site e.g. local cabling between User's communications room and the **User's** control desk.

In the case of a **Network Operator**, National Grid ESO in coordination with the relevant **Transmission Licensee** will install the communications infrastructure to a location agreed with the **Network Operator**. The **Network Operator** will then install the communications infrastructure and cross site wiring from the agreed termination point to the **Network Operators Control Centre**.

At **Network Operator Control Centres** and some other **Control Points**, the relevant **Transmission Licensee** in coordination with National Grid ESO may also install a second **Control Phone** for **Black Start** or for a **Distributed Restoration Zone**, this is described in further detail in paragraph 10.

At sites where the **User** prefers to terminate the **Control Telephony** service on their own **PABX** or other telephony apparatus in place of a standalone **Control Phone**, the **Relevant Transmission Licensee** in co-ordination with National Grid ESO will normally provide a **Trunk Line** to the **Control Point** or **Network Operator Control Centre**.

A combination of the above methods may also be employed.

6. Presentation of Calls and making Routine and Emergency Control Calls at Control Points

At **Control Points** or at **Network Operator's Control Centres**, where the **Relevant Transmission Licensee** (in co-ordination with National Grid ESO) provides the **Control Telephony** service, a **Control Phone(s)** will be provided.

The **ESO Control Phone** must be installed in a prominent position at the **Control Point** and at **Network Operator's Control Centres**, suitable for use by operational staff.

The **ESO Control Phone** has pre-programmed settings to allow rapid dialling. This feature is provided for making **Routine Control Calls** and **Emergency Control Calls**. **Emergency Control Calls** automatically override network congestion by disconnecting non-emergency calls, and are presented with a distinctive ringing signal at the **ENCC**.

An incoming **Routine Control Call** from the **ENCC** is indicated by a continuous ringing signal on a **Control Phone**. The **ENCC** will only make **Emergency Control Calls** to **Network Operator Control Centres**, not **Control Points** (see Paragraph 7).

If the **User** is required to participate in a **Local Joint Restoration Plan**, a second **Control Phone** may be provided for communication with the relevant **Network Operators Control Centre** (see Paragraph 10). This would not apply in the case of a **Distributed Restoration Zone** where the responsibility for telecommunications resilience rests between the **Network Operator** and **Restoration Service Provider**.

Where the **User** chooses to present the **Control Telephony** service on their own telephony system in place of the **ESO Control Phone**, these arrangements must be agreed with National Grid ESO (see also Paragraph 7).

7. Presentation of Calls and making Routine and Emergency Control Calls at Network Operator Control Centres and Non-Embedded Customer's Control Centres

At **Network Operator Control Centres** and in respect of **Non-Embedded Customer's Control Centres**, where the relevant **Transmission Licensee** in co-ordination with National Grid ESO provides the **Control Telephony** service, a **Control Phone** will be provided for making either **Routine Control Calls** or **Emergency Control Calls**.

If the **User** is required to participate in a **Local Joint Restoration Plan**, a second **Control Phone** will be provided for communication with the relevant **Control Point** (see Paragraph 10).

Control Phones must be installed in a prominent position at the **Network Operator Control Centre** and **Non Embedded Customer's Control Centre**, suitable for use by operational staff.

Control Phones have pre-programmed settings to allow rapid dialling. This feature is provided for making **Routine Control Calls** and **Emergency Control Calls** as appropriate. **Emergency Control Calls** automatically override network congestion by disconnecting non-emergency calls, and are presented with a distinctive ringing signal at the **ENCC**.

An incoming **Control Call** is indicated by a continuous ringing signal on the respective **Control Phone**.

Where the **Network Operator** or **Non-Embedded Customer** chooses to present the **Control Telephony** service on their own telephony system in place of the **ESO Control Phones**, these arrangements must be agreed with National Grid ESO. The **Network Operator** or **Non-Embedded Customer** must ensure that incoming calls from National Grid ESO are presented in a way that distinguishes these from other calls received by the **Network Operator** or **Non-Embedded Customer**. On receipt of an incoming **Control Call**, Operational staff must be made aware that National Grid ESO are making either a **Routine Control Call** or **Emergency Control Call** to the **Network Operator Control Centre** or **Non-Embedded Customers Control Centre**. Incoming **Emergency Control Calls** from National Grid ESO should be presented in a way that distinguishes them from other non-emergency calls and gives them the appropriate priority. Facilities must be provided for initiating **Routine** and **Emergency Control Calls** to the **ENCC**.

If incoming calls are queued by the **Network Operator** or **Non-Embedded Customer's** system, calls from National Grid ESO or a **Relevant Transmission Licensee** must be given priority over other calls at the **Network Operator** or **Non-Embedded Customer** site, as if they were presented on a separate **ESO Control Phone**.

If calls from separate desks at the **Network Operator Control Centre** or **Non-Embedded Customer Control Centre** are required to be identified uniquely at the **ENCC** e.g. if the **Network Operator Control Centre** manages more than one electricity Distribution Area, then separate numbers will be allocated by National Grid ESO for each area.

8. Control Telephony Disaster Recovery (DR) Arrangements for Network Operator Control Centres

Network Operators must have arrangements in place to transfer **Control Telephony** calls from their Main **Control Centre** to their Contingency **Control Centre**, when the contingency site is operational. For each **Network Operator**, actual provision of services and changeover arrangements will require separate technical and operational agreement between National Grid ESO, the **Relevant Transmission Licensee** and the **Network Operator**.

9. Costs associated with the Control Telephony Service

Relevant Transmission Licensees in co-ordination with National Grid ESO are responsible for providing and supporting the **Control Telephony** service at **Control Points** or **Network Operator Control Centres**. An exception applies where the **User** has opted to connect the service via their own telephony system, in which case **Relevant Transmission Licensee** in co-ordination with National Grid ESO will be responsible for the service up-to the **Trunk Line** interface on the **Control Telephony** equipment.

Where the **User** requires an existing **Control Telephony** service to be moved to an alternative location (e.g. due to site relocation) the **User** will be expected to pay all reasonable costs incurred by the **Relevant Transmission Licensee** and/or National Grid ESO to move the service.

10. Black Start Assured Service and Distributed Restoration

Where a **Control Point** or **Network Operator Control Centre** is required to participate in a **Local Joint Restoration Plan**, the **Relevant Transmission Licensee** in co-ordination with National Grid ESO will provide sufficient **Control Phones** and **Trunk Lines** to enable the **Local Joint Restoration Plan** to be implemented without encountering congestion e.g. where a **Black Start Power Station** is required to communicate with a **Network Operator** and the **ENCC**, two separate **ESO Control Phones**, will be installed at the **Black Start Power Station**.

National Grid ESO and the **User** will implement frequent testing of these facilities in accordance with the requirements of CC/ECC.6.5.4.4 of the Grid Code to ensure they are in good working order and the operational staff are familiar with its use.

In the case of **Distributed Restoration Zones**, the above communication facilities shall apply between **National Grid ESO** and **Network Operator**. The communications and resilience requirements (including **Mains Independence**) between the **Network Operator** and **Restoration Service Providers** forming part of the **Distribution Restoration Zone** shall be specified by the **Network Operator**.

11. Technical Standards and Service Levels

The following technical standards and service levels apply to the **Control Telephony** service. The **User** is responsible for providing site access for National Grid ESO and the **Relevant Transmission Licensee** to meet the **SLAs** quoted.

Description	Standard/SLA
ESO Control Telephony Service	**Control Telephony** equipment (if provided) **Trunk Line** (if provided **Control Points at Black Start Service Providers premises**: 5hr fix, 24 hrs/day, 365/6 days/yr **Distribution Restoration Zones** (between National Grid ESO and **Network Operators Control Centres** only) 5hr fix, 24 hrs/day, 365/6 days/yr Non-**Black Start**: 5hr fix 8am-6pm normal business days
Mains Independence	For **Network Operator Control Centres, Non-Embedded Customer Control Centres** and **Control Points** used for **Black Start Power Stations and Distribution Restoration Zones,** at least 72 hours.

	For other **Control Points** at least 24 hours

12. System Telephony

The table in Annex 1 provides examples of use of **Control Telephony** and **System Telephony**.

ANNEX 1

	Control Point in GB		Control Point Outside GB	
	Staffed	**Virtual**	**Staffed**	**Virtual**
EU Code (24hrs) **Min Standard:** System Telephony using Dual SIP* acceptable – provided it meets the 24hr requirement (SIP resilience is very close to MPLS resilience currently used for overseas Control Points)	Permitted at Embedded Medium Power Stations* or Embedded Small Power Stations* or where the aggregated Registered Capacity is less than 100MW. Not permitted for directly connected Power Stations	Permitted at Embedded Medium Power Stations* or Embedded Small Power Stations* or where the aggregated Registered Capacity is less than 100MW. Not permitted for directly connected Power Stations	Permitted at Embedded Medium Power Stations* or Embedded Small Power Stations* or where the aggregated Registered Capacity is less than 100MW. Not permitted for directly connected Power Stations	Permitted at Embedded Medium Power Stations* or Embedded Small Power Stations* or where the aggregated Registered Capacity is less than 100MW. Not permitted for directly connected Power Stations
Control Phone via MPLS* with Public Telephony backup	Required for all directly connected Plant or at Large Embedded Power Stations or where the Aggregated Registered Capacity is 100MW or greater	Required for all directly connected Plant or at Large Embedded Power Stations or where the Aggregated Registered Capacity is 100MW or greater	Required for all directly connected Plant or at Large Embedded Power Stations or where the Aggregated Registered Capacity is 100MW or greater	Required for all directly connected Plant or at Large Embedded Power Stations or where the Aggregated Registered Capacity is 100MW or greater
GB Electricity Restoration (72hrs) **Min Standard:** Must use Control Telephony via OpTel with Openreach fibre circuit if required NOT via MPLS	Required	Required	NOT PERMITTED	NOT PERMITTED

* A Medium Power Station is a Power Station in England and Wales with a Registered Capacity of 50 MW or greater and less than 100MW
* A Large Power Station is a Power Station in England and Wales with a Registered Capacity of 100MW or greater, 30MW or greater in Scottish Power's Transmission Area and 10MW or above in Scottish Hydro Electricity's Transmission Area
* SIP – Session Initiation Protocol (makes end-to-end connections for voice communication over IP networks)
* MPLS – Multiprotocol Label Switching (a routing technique in telecommunications networks that directs data from one node to the next based on labels)